



Ecosystem services and Antarctica: The time has come?

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ABSTRACT

Antarctica's status as a unparalleled place of international scientific collaboration was entrenched in the Antarctic Treaty 1959, and its designation as a "natural reserve, devoted to peace and science" formally referenced in the Protocol on Environmental Protection to the Antarctic Treaty (PEPAT) 1991 (PEPAT 1991, Article 2). The continent's importance for maintenance of the global ecosphere has more recently been confirmed by the Intergovernmental Panel on Climate Change (Anisimov et al., 2007). However, the expanded scale and scope of commercial tourism in Antarctica over the last quarter century raises issues about whether the laissez-faire approach to tourism management that has been taken under the auspices of Antarctic Treaty System (ATS) governance is sufficient to protect the Antarctic environment and its "wilderness" values from the negative impacts of tourism (PEPAT, Article 3(1)). This is an subject that has occupied a number of the Antarctic Treaty Consultative Parties (ATCPs), who form the decision-making group within the ATS, and resulted in a recent question by The Netherlands to fellow ATCPs as to whether "a system of obligatory or voluntary payments by individual tourists or tourist organizations (as a payment for 'ecosystem services')?" should be established within the ATS (The Netherlands, ATCM XI, 2012).

This paper considers the Dutch question about payment for ecosystem services in Antarctica as a potential tourism regulatory tool. It also examines the legal and related political issues that a proposal for introduction of ecosystem services would generate in an area of the earth which, de facto, is treated as an international commons, but is also the site of continuing contestation and challenge over abeyant claims to sovereignty by seven states within the ATCP group. Issues canvassed in this context include: the different political-philosophical approaches to tourism and the environment evinced by the ATCPs; the limited number of states signatory to the Treaty and the increase in non-state actor activity in the Southern Ocean and Antarctic waters, and concomitant difficulties of monitoring and compliance in a geographically expansive and remote area of the earth; and the potential of ecosystem services in Antarctica to help realise some of the United Nations' post-2015 Sustainable Development Goals.

1. Introduction

In 2017 the Antarctic Treaty entered its forty-fifth year as the convention that initiated multilateral governance in the seventh largest continent and simultaneously established the world's first nuclear-free zone. Fifty-three countries are now States Parties to the Antarctic Treaty, a more than four hundred percent increase since its creation in 1959 and one that indicates the growing interest in the natural resources and biodiversity of the continent, recognition of the importance of Antarctica in the biosphere, and the changing geopolitics of the southern polar region (ATS Secretariat, n.d.).

The growth in Antarctic Treaty signatories is mirrored in an increase in Antarctic tourism numbers that has occurred over the last three decades. The expansion of tourism in the continent has aroused concern about the long-term sustainability of tourism in Antarctica, and the impacts of tourism on one of the most fragile and pristine environments left on earth (Tin et al., 2014; Shaw et al., 2014; Frenot et al., 2005; Hughes et al., 2011). However, the governing group of states within the Antarctic Treaty System (ATS), the twenty-nine Antarctic Treaty Consultative Parties (ATCP), has not been able to agree upon a collective approach to tourism management and there remain significant philosophical differences between them about how

Abbreviations: ATCM, Antarctic Treaty Consultative Meeting; ATCPs, Antarctic Treaty Consultative Parties; ATS, Antarctic Treaty System; CCAMLR, Convention on the Conservation of Antarctic Marine Living Resources; CEP, Committee for Environmental Protection; CRAMRA, Convention on the Regulation of Antarctic Mineral Resource Activities; EIA, Environmental Impact Assessments; EU, European Union; IAATO, International Association of Antarctica Tour Operators; IGY, International Geophysical Year; NAP, National Antarctic Programmes; PEPAT, Protocol on Environmental Protection to the Antarctic Treaty; PES, Payment for Ecosystem Services; SCAR, Scientific Committee on Antarctic Research; SDG, Sustainable Development Goals

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tourism in Antarctica should be handled (Bastmeijer and Lamers, 2012).

A Payment for Ecosystem Services (PES) approach to tourism management was suggested by The Netherlands in 2012 at the annual Antarctic Treaty Consultative Meeting (ATCM) as an option for their fellow Consultative Parties to consider (Netherlands, 2012a). PES denotes “market incentives for the provision of public goods within the field of environmental and resource issues” (Derissen and Latacz-Lohmann, 2013). Nsoh and Reid (2013) describe PES as

a mechanism whereby payments are provided in exchange for the management of land to maintain or enhance the health of the ecosystem, thereby providing benefits for the public or specific beneficiaries, eg carbon storage or control of water resources. Such payments can take the form of flat-rate subsidies or individually negotiated contracts to ensure that greater effectiveness can be achieved.

PES need not be confined to land management, though. Salzman (2009) notes that PES

refers to voluntary transactions where a service provider is paid by or on behalf of service beneficiaries for land, coastal, or marine management practices that are expected to result in continued or improved service provision.¹

PES has gained popularity as an approach to conservation over the last two decades, particularly since its use in the United Nations Millennium Ecosystem Assessment (UNEP, 2005), and been described as “probably the most promising innovation in conservation since Rio 1992” (Wunder and Wertz-Kanunnikoff, 2009, quoted in Schomers and Matzdorf, 2013). As Costanza et al. (1997) note, “[b]ecause ecosystem services are not fully ‘captured’ in commercial markets or adequately quantified in terms comparable with economic services and manufactured capital, they are often given too little weight in policy decisions.” PES attempts to remedy the commercial market problem by focusing on the idea that ecosystem services have distinct value for users, and that these positive externalities can be applied in a market framework using a “Beneficiary Pays Principle” or “Provider Gets Principle” (Van Hecken and Bastiaensen, 2010). PES has been used by a variety of states, such as Nicaragua, Bolivia, Costa Rica, Mexico, Australia, and the United States, who have applied PES within their own countries or in combination with others in regional programmes (Schomers and Matzdorf, 2013).

PES is a potentially attractive tourism management tool for Antarctica because it could address multiple issues that challenge ATS governance in this policy area. Firstly, it uses a holistic, ecosystem approach to engage with environmental conservation that is consistent with approaches already used within the ATS regime, such as the Convention on the Conservation of Antarctic Marine Living Resources (Fabra and Gascon, 2008). Secondly, the introduction of PES would acknowledge the multiple benefits that Antarctic ecosystem services and ongoing Antarctic conservation efforts provide for commercial tourism and establish a mechanism for payment of use rights by the commercial tourism industry to the governance group of the ATS, the Consultative Parties. This would generate an additional revenue stream for environmental conservation in Antarctica that could reduce the current dependence on the Consultative Parties to provide the monies for conservation activities in the continent. Thirdly, PES could serve as a cohering focus for an ATS tourism management policy in Antarctica,

something that is currently lacking and dangerously overdue in a policy area that is critically important for Antarctica's future as a “natural reserve” (Protocol on Environmental Protection to the Antarctic Treaty (PEPAT), 1991) and status as a “climate change barometer” (Wehrmann, 2016). Finally, this article suggests that PES could be introduced in Antarctic tourism management without jeopardising the abeyant Antarctic sovereignty claims of the United Kingdom, Argentina, Chile, New Zealand, Australia, Norway and France, a critical consideration for any policy innovation in Antarctica. An additional factor, not specific to Antarctic tourism management but with international relevance, is that the introduction of PES in Antarctic tourism management would be an important step towards beginning a global conversation about the use of PES in the conservation and management of protected spaces around the world under the governance of more than two states.²

Despite these incentives, achieving the introduction of PES in Antarctic tourism management would not be unproblematic. Should the governing group decide to endorse use of a PES tool in Antarctic tourism, it would represent a fundamental change in how southern polar tourism management is both conceptualised and operationalized. Even beyond the consequences for tourism, though, the espousal of PES in tourism management would signal a shift in the nature of environmental governance in Antarctica itself. Given the unique nature of the legal and political arrangements for Antarctica, realising a PES approach to tourism in the area covered by the Antarctic Treaty (south of 60° South latitude (Antarctic Treaty, 1959)) would present a considerable challenge for the Consultative Parties because it would involve grappling with issues, both small and large, fundamental to the political and legal dimensions of sovereignty in the continent, and require addressing politically sensitive issues and ideas that the ATS leadership group have, thus far, been loath to engage with.

Despite these formidable obstacles, the use of a PES policy tool in Antarctic tourism management would appear to be a good fit conceptually for a remote, polar area that is formally designated a “natural reserve” with “aesthetic and wilderness values” (PEPAT, 1991), contains multiple protected sites, and is extremely sensitive to anthropogenic impacts, but which is also increasingly accessible and vulnerable to tourist incursion, governed through a condominium framework whose political arrangements preclude swift decision-making, and within the parameters of legal instruments that contain inherent tensions between science and commerce. To the extent that PES represents a regulatory instrument containing elements of both capitalism and ecologism,³ it would seem an appropriate tool for inclusion in an integrated Antarctic tourism management policy. The notion of a natural estate common to humankind whose untrammelled functioning is essential to life on earth resonates with green philosophical thought that recognizes a fundamental, interdependent relationship between humans and the environment, and is also captured in human rights scholarship that acknowledges human rights are ecologically embedded (Barry and Woods, 2013). While the idea of the continent being subject to quantification of its ‘value’ across different ecosystem service dimensions – such an exercise being a necessary prerequisite to introducing PES in Antarctic tourism management – would be anathema for ecological purists, it is worth remembering that since first contact Antarctica has existed within a capitalist paradigm that venerates profit, and that human activities in and around the continent have until recently been motivated almost solely by the profits to be made from commodification of its resources. PES moves

¹ The Global Environment Facility (the funder of the Millennium Ecosystem Assessment) notes that the wide variation in PES definitions “from narrow market-based definitions with direct transactions between providers and beneficiaries (including schemes where private buyers and sellers arrange voluntary and conditional transactions for the delivery of ecosystem services), to broader schemes in which those who benefit directly from the ecosystem service pay (usually indirectly) those who provide the services” (Global Environment Facility, n.d.).

² PES in Antarctic tourism management may, for instance, have relevance for Large Marine Ecosystems such as the Benguela Current which, under the Benguela Current Convention of 2013, is managed through the condominium governance of South Africa, Namibia and Angola.

³ Albeit an ecologism which is somewhere between Naess’ (2005) definitions of “shallow ecology” and “deep ecology”. Perhaps the closest approximation is the “bright green” ecologism described by Robertson (2008).

beyond the simple instrumentalism of cost-benefit analyses of earlier conservation approaches in accepting the integrated holism of ecosystems, an interconnected human-nature relationship embedded within them, and the varied nature of the services and ‘value’ (for instance, the notion of value can include spiritual and aesthetic values which may not be reducible to commercial metrics) that the environment provides for humans. While still operating within an anthropocentric framework, PES begins to move away from the orthodox position that only “humanity has inherent value” (Gillespie, 1997).

This article is divided into six parts. The first part examines how Antarctic tourism has expanded over the last three decades and the problems for tourism management this has posed to the Consultative Parties. In the second part, the underlying issues for Antarctic governance and the core problem of sovereignty are analysed. Part three considers the Dutch PES proposal put forward at the 2011 ATCM and the four key questions posed in the paper, while part four examines those questions and suggests some answers. The issue of sovereignty and a model of pluralist sovereignty that could be adopted for use in the introduction of PES in Antarctic tourism management is the focus of part five. The final part of the article considers a number of critiques of PES and problematic issues related to PES that would require careful consideration by the Consultative Parties for the implementation of PES in Antarctic tourism management.

Some caveats need to be made, though, about the argument advanced in this article. The article focuses on ship-borne tourism as that is the main form of for-profit tourism in Antarctica. It does not deal with independent expeditions and flight operators, although their operations would need to be considered by the ATCPs prior to development of a comprehensive tourism PES plan.⁴ Nor does it deal with what could be categorised as ‘governmental’ tourism; that is, the operations of national Antarctic programmes (NAP) and scientific and ancillary staff at national bases and stations. An argument can be made that since NAP staff spend longer periods of time in Antarctica than do tourists and their human footprint is potentially larger than that of commercial tourism, NAP should also be included in a tourism PES proposal. However, it is not dealt with in this article as NAP and their activities fall under articles II, III and IX of the Antarctic Treaty – that is, their presence is validated by a foundational premise of the Treaty, scientific research. NAP bases and staff are present in Antarctica for *fundamentally different purposes* than recreational tourists and commercial tour operators. This is not to suggest that NAP do not need to be scrutinised and held to account for their contribution to the anthropogenic impact in Antarctica. Nor does it imply that NAP should be exempt from PES. But this article concentrates on PES in the context of commercial tourism only. Should the Consultative Parties accept the concept of PES for commercial tourism, then the next step may well be for the ATCPs to interrogate the use of PES for NAP. However, the calculations of PES for NAP are likely to be quite different than those for commercial tourism operators because of the scientific mandate of the Antarctic Treaty. The contributions of the international scientific research undertaken in Antarctica by NAP to the global public good would have to be factored into equations about the ecosystem services payments made by NAP. The research contributions of the NAP reflect the intentions of the treaty-makers that scientific research in Antarctica will contribute to “the progress of all mankind”, and in that task “further the purposes and principles embodied in the Charter

⁴ Although private independent expeditions lie outside the ambit of commercial tourism, these visitors to the continent are also users of Antarctic ecosystem services and should be considered eligible buyers of ecosystem services. What should be noted in this context is, as reported at the 2017 ATCM, that there are extant difficulties experienced by Consultative Parties in regulating both yachts that travel to Antarctica and adventure tourists from their own states. This reinforces the increasingly critical need for the ATCPs to operationalize a common Antarctic tourism management and regulatory framework, especially as the continent becomes more accessible and the potential for Antarctic tourism operators from outside IAATO and the ATCP states increases. See Final Report of the Fortieth Antarctic Treaty Consultative Meeting (2017).

of the United Nations” (Preamble, Antarctic Treaty). In this wider context, the idea of the global public good and the potential for reconceptualisation of Antarctica as a knowledge commons is one that is also explored.

2. Antarctic tourism growth and problems for tourism management

Over the last thirty years, interest in Antarctic tourism has increased, bringing in its wake greater numbers of tourists to the continent. In the 1995–1996 season the International Association of Antarctica Tour Operators (IAATO) reported 8120 Antarctic tourists (IAATO, n.d.). Ten years later numbers had climbed to 29,823 for the 2005–2006 season, while by 2015–16, after several years of global recession, the numbers had rebounded to reach 38,478 (IAATO, 2006, 2016b). A further increase took place in 2016–2017 with IAATO reporting tourist numbers of 44,367 and forecasting that the 2017–2018 figures would likely rival those of the peak 2007–2008 season when 46,265 tourists visited Antarctica (IAATO, 2016b, 2017).⁵ Alongside the expanding tourism figures, though, have emerged growing concerns about the impact of tourism on the environment. New forms of tourist activities in the continent, such as kayaking, climbing and trekking, make previously unexplored parts of the continent accessible to tourists, including areas where scientists have yet to undertake research, while the enlarged numbers of landed visitors increases the stressors on the environment and its natural inhabitants (Committee for Environmental Protection CEP, 2012). The potential of the horizontal and vertical expansion of tourism to impact negatively on the Antarctic environment is significant. The carrying capacity⁶ of sites is strained by repeated visits of tourists, particularly in the Antarctic Peninsula where the majority of sites visited by tourists are located – for instance, “in the 2013/14 season, just 15 of the Antarctic Peninsula sites made up 68% of all passenger landings” (Bender et al., 2016). Researchers have drawn attention to the invidious effect of cumulative impacts upon the environment, and the multiple harms that may be done through repeated visitations. These include, *inter alia*, waste, oil, fuels, sewage and air pollution from ship-borne tourism; the unintended introduction of alien species; disturbances in colonies where birds or seals are breeding; pedestrian and aircraft noise; souvenir-taking; and littering (Verbitsky, 2013; Engelbertz et al., 2015). There are also risks for tourists themselves associated with travelling in Southern Ocean and Antarctic waters because of the dangerous combination of lack of up to date hydrographic maps for the seas surrounding Antarctica and continuing changes in sea ice patterns (Verbitsky, 2015).

In any sensitive environment, careful and diligent tourism management is important to help preserve the ecosystem and prevent degradation of natural habitats. Where the environment in question is not just one of the few remaining wilderness areas on earth but *the most* pristine of these, the need for robust management is even more a priority. In Antarctica, however, there is an additional threshold of concern because of the great importance of Antarctica for global climate regulation. The Intergovernmental Panel on Climate Change has noted that the Arctic and Antarctic are “the regions with the greatest potential to affect global climate and thus human populations and biodiversity” (Anisimov et al., 2007). Additionally, and in contrast to previous scholarship that suggested that the tropical areas contain the greatest biodiversity, Antarctica has been recently found to contain

⁵ It should be noted that these figures underestimate the total number of Antarctic tourists as they represent only tourists travelling on IAATO member vessels. One of the perennial problems for calculating Antarctic tourism numbers is that there is no central database incorporating all tourism statistics.

⁶ Carrying capacity can be defined as “a point beyond which further levels of visitation or development would lead to an unacceptable deterioration of the physical environment and of the visitor’s experience” (Archer and Cooper, 1998).

biodiversity of a greater range and scope than previously anticipated (Chown et al., 2015). Antarctica's role in the global biome, then, is a vital one on a number of fronts and the need to govern tourism effectively even more acute.

Tourism is particularly difficult to monitor in Antarctica because of the size of the continent, its remoteness and inaccessibility, and the lack of traditional tourism and governmental infrastructure. In many ways, the tourism industry and tourists themselves have operated on an 'honour' system which relies on their voluntary compliance with guidelines and codes of conduct. That this system of self-regulation has evolved is due in large part to a lack of regulation in the Antarctic tourist arena by the ATCPs. This, in turn, can be attributed to a number of factors, including significant differences of opinion among the Consultative Parties about how they should collectively deal with tourism (Enzenbacher, 2007). These differences traverse a range of issues that include state levels of involvement with tourism, financial gain from tourism, and permanent land-based facilities for tourism (Enzenbacher, 2007). Although the Antarctic Treaty itself does not mention tourism, the Protocol on Environmental Protection to the Antarctic Treaty 1991 does explicitly reference tourism, making it a legitimate activity in Antarctica and bringing it within the governance mandate of the Consultative Parties. The Consultative Parties, then, cannot ignore tourism. Nor can they continue to leave it on the back-burner as they did for many years, or continue with a *laissez-faire* approach to this policy area without risking challenge to their qualifications to governance of Antarctica (Verbitsky, 2013). However, the differences between them about tourism management have been significant enough to prevent the Consultative Parties achieving more than agreement about basic principles to underlie future ATCM decision-making in tourism management (Resolution 7, 2009).

Without a central decision-making body that is both willing and able to pro-actively intervene to safeguard Antarctica's environment and respond to evolving tourism challenges, the tourism industry has been left to bridge the gap by introducing industry-specific regulations under the rubric of the professional body, the International Association of Antarctica Tour Operators (IAATO). However, this is a less than satisfactory solution. While many of IAATO's members operate small to medium size, education-focused, environmentally-conscious tours with high staff-tourist ratios, there are other operators who run large-scale tours where the focus is on the luxury cruise experience. New modes of tourism are also developing. Ship-borne tourism still accounts for the majority of tourism, but Fly-Sail tourism (where tourists fly into the continent, then continue their journey aboard a ship), independent yacht expeditions, and adventure tourism also bring tourists to the continent and present their own challenges for tourism management (Jabour and Murray, 2004; Committee for Environmental Protection CEP, 2012).

There are other difficulties. IAATO's bylaws require its own members to comply with various ATS, IMO and other operational conditions, and disciplinary measures (reprimand, probation and expulsion) can be imposed by the association for member non-compliance with bylaws (IAATO, 2016a). However, since IAATO membership is voluntary, Antarctic tourist operators are not required to be members of IAATO. Consequently, IAATO's reach is limited to its own membership, and non-members are able to operate without adequate environmental safeguards upon their operations. From a governance perspective, as well, the idea of industry being the *de facto* regulators in a fragile environment that is central to the global ecosystem is inimical to the notion of stewardship in Antarctica that the ATS has relied upon for decades to legitimise its leadership role in the continent (New Zealand Antarctic Research Institute, n.d.; National Science Foundation, n.d; Australian Antarctic Division, n.d).

What also makes for additional problems in relation to Antarctic tourism management policy is the fact that fewer than one third of the number of states in the world are signatories to the Antarctic Treaty.

The problem of actors who are not bound by any of the ATS tourism measures is, therefore, a significant one.⁷ This applies not only to states, but also their nationals who visit Antarctica as tourists. It is compounded when the relationship with corporate entities and their agents and assets is included and is especially problematic when applied to ship-borne tourism – for instance, a ship may be flagged to one state (state A), the corporation that owns it may be headquartered in another (state B), the crew may be nationals of two or more different states (states C and D), the captain and ice pilot from still other countries (states E and F), and the passengers from a range of yet other states (states G–J).

The need for the ATCPs to take on a more pro-active role in Antarctic tourism has been acknowledged by a number of Consultative Parties over the last decade. Processes have been initiated over several ATCMs to identify the gaps, priority issues, and key questions that need to be addressed in Antarctic tourism management: an Inter-Sessional Contact Group was established at the 2011 ATCM to prepare for the following year's 2012 ATCM review of tourism; a draft list of "out-standing questions" on Antarctic tourism was circulated for comment in early 2011 and a report based on the questions and responses received presented at the 2012 ATCM; and a draft tourism study prepared by the Committee for Environmental Protection was placed on the agenda of the 2012 ATCM (Netherlands, 2012b; Committee for Environmental Protection, 2012). Additionally, at the 2015 ATCM an Intersessional Contact Group was charged with "Working Towards Developing a Strategic Approach to Environmentally Managed Tourism and Non-governmental Activities in the Antarctic", and reporting back to the following ATCM on this matter. The group's 2016 report was notable for the consensus that appeared, finally, to have developed about the "core priority" of agreement "on a common vision of Antarctic tourism" with a recommendation that work on this begin at the ATCM XL (New Zealand and India, 2016). However, despite the growing consensus about a shared ATCP vision for Antarctic tourism, the precise elements that will comprise that vision and which Consultative Parties can agree to remain elusive, as a failed attempt (spearheaded by New Zealand) at the 2017 ATCM to give practical effect to the 2009 General Principles on Antarctic Tourism demonstrated (New Zealand, 2017; Secretariat of the Antarctic Treaty, 2017).

3. Antarctica, the ATS and the governance system

The problems in Antarctic tourism management can be traced back to the Antarctic Treaty System and the founding treaty of the regime. The Antarctic Treaty was created in 1959 as a response to several inter-related issues. The first of these was the 'ABC conflict', the overlapping claims made on Antarctica by three states, Argentina (1943), Chile (1940) and the United Kingdom (1908 & 1917). The Argentinian and Chilean claims were the last of a total of seven claims to be made by states in the twentieth century. While the other four claimant states (Australia 1933; France 1924; New Zealand 1923; Norway 1939) each recognise the claims on Antarctica of their fellow claimants, the situation was radically different with the ABC claimants. Conflict between the three states during the nineteen fifties concerning their overlapping claims led to fears that armed conflict would break out among them. As all three were during this period of the Cold War co-members of the western alliance, the United States as leader of the alliance was at pains to find a means to resolve the dispute (Dodds, 2012). The Antarctic Treaty became the vehicle for long-term, peaceful management of the dispute.

The key device for assuaging the disputants and, indeed, for

⁷ It should be noted that only two Antarctic tourism 'measures' have ever been agreed upon by the ATCPs. Neither of these measures is in force yet, which means that no actors are currently bound by them.

persuading them and the remaining four claimant states to sign up to the Treaty, was Article IV. This article has been described as “ingenious” because it enabled claimant states to retain their Antarctic claims (albeit by placing them in abeyance for the duration of the Treaty) and, simultaneously, prevented other signatory states from making new claims upon the continent (Scott, 2011). While the seven claimant states were reassured that there was no prejudice to their extant claims by becoming signatories, the Treaty nevertheless facilitated continuing international scientific collaboration in the continent and set out protocols for ensuring that Antarctica’s newly formalised peaceful, non-militarised status was observed and maintained by all signatories.

The second issue which played a part in the creation of the Antarctic Treaty was, according to Scott (2011), the desire of the US “to ensure its freedom of movement and behaviour in the “global commons””. In this reading of the convention’s origins, the Antarctic Treaty was a useful device for permitting the US to gain complete access to the Antarctic, despite the seven existing claims.

The US had made no territorial claim in Antarctica but by article IV would be allowed to go anywhere on the continent and to use the continent for all but non-peaceful activities. Non-discriminatory freedom of access was important to the US not only for the access itself but so as not to prejudice the US’ underlying juridical position (Scott, 2011).

Russia and the US have “strong potential claims to sovereignty in Antarctica” (Prescott and Triggs, 2008), positions that are preserved under Article IV(2) of the Antarctic Treaty, leading Hemmings to describe these two states as “semi-claimants” in the Antarctic (Hemmings, 2012).

The most often cited issue in the generation of the Antarctic Treaty was the success of the International Geophysical Year (IGY) of 1957–58. The IGY was intended as a practical global celebration of international scientific collaboration and innovation, and involved multinational scientific projects in different parts of the world, including Antarctica. Twelve countries – the seven claimant states, plus Belgium, Japan, South Africa, the Soviet Union, and the United States of America – took part in IGY activities in Antarctica. The IGY was deemed a successful enterprise and led to calls to continue scientific cooperation beyond the conclusion of the year (Elzinga, 1993; Bonner, 1993). The United States responded by inviting the other eleven states that had participated in Antarctic projects in the IGY to Washington in 1959 to negotiate a treaty that would formally entrench Antarctica as a site of international scientific collaboration.

The treaty that emerged from the Washington negotiations was a construct that, via the “freezing” of existing claims on Antarctica and the prevention of new claims, achieved peace and international scientific cooperation as the distinguishing features of the continent. The declaration in Article I of the Treaty that “Antarctica shall be used for peaceful purposes only”, and prohibitions on nuclear activity and militarisation were buttressed with transparency provisions and protocols for inspection by observers of any signatory state of all areas of Antarctica. The Antarctic Treaty thus became not only the first convention to establish a nuclear-free zone on earth, but also a model for future arms agreements in its transparency and disclosure requirements (Klotz, 2012; Gottemoeller, 2016). It has become the core convention of a southern polar governance regime that now encompasses an interlocking web of conventions and associated legal instruments ranging across a diverse gamut of subject matter.⁸ The Treaty itself was supplemented in 1991 by the Protocol on Environmental Protection to the Antarctic Treaty (PEPAT) which deals with a variety

of issues that came to the political fore in the decades after ratification of the Treaty in 1961. These include environmental protection generally, waste disposal, area protection and management, liability for maritime accidents and prevention of marine pollution.

However, while the Antarctic Treaty was a remarkable achievement in the context of the late 1950s and the Cold War division between east and west, it included provisions that have subsequently become problematic for effective governance in Antarctica. These include: a decision-making system that requires extremely high levels of agreement for an initiative to be green-lighted; tough criteria for a signatory state to move to decision-making status in the regime; an evolution of values from limited foundational ones in the Antarctic Treaty to broad, sometimes oppositional ones post-PEPAT (Hemmings, 2012); tensions between science and commerce; the unclear politico-legal status of Antarctica; and the closely related matter of continuing unresolved issues over sovereignty caused by Article IV of the Antarctic Treaty’s treatment of claims upon the continent.

Article IX(4) of the Treaty requires unanimous agreement between decision-making states at the annual ATCMs before an initiative is approved. In practice this has evolved into consensus agreement (Secretariat of the Antarctic Treaty, 2016), but it is still very difficult to obtain the necessary numbers for approval. Effectively, it means that just one state can hold all the others hostage to their determination *not* to agree to an initiative. Gaining approval for initiatives at ATCMs has also become an even more difficult endeavour as the number of decision-making states has increased from the original twelve in 1959 to twenty-nine in 2017, and as ATCM agendas become more crowded. There are other problems. According to Article IX(2), signatory states that have acceded to the Treaty are eligible to move from Contracting Party (signatory status) to Consultative Party status (decision-making party status) by fulfilling the criterion of demonstrating their “interest in Antarctica by conducting substantial scientific research activity there, such as the establishment of a scientific station or the despatch of a scientific expedition”. Such activity requires considerable capital outlay, a factor which has meant that few developing states have made the transition from Contracting to Consultative Party status. This was one of the key issues which drove developing states during the 1980s to protest against the ATS regime and its decision-making group in the United Nations, leading to the UN Secretary-General’s 1984 report on the “Question of Antarctica” and the tabling of the issue on the UN General Assembly agenda for over a decade (Secretariat of the Antarctic Treaty, 2016; United Nations General Assembly, 1984).

Further difficulties have surfaced in relation to the broadening out of values from the foundational ones of conflict management of sovereignty claims and international scientific experimentation and collaboration to a wider range of values in the wake of PEPAT’s institution in 1991. Hemmings (2012) notes that currently in Antarctica there is an attempt to

accommodate a number of different interests, including: global justice and equity; resource and geopolitical interests of states able to operate there; territorial aspirations of the seven claimant and two ‘semi-claimant’ states; the need to protect the Antarctic environment; continuing interest in Antarctica as a global laboratory; commercial interests in marine harvesting, tourism, bioprospecting and (notwithstanding the present prohibition) mineral resource activities in the medium term.

The different agendas represented by a number of these interests (for instance, between global justice and equity, mineral resource activities, protection of the Antarctic environment, and continuing sovereignty ambitions of the claimant states) are not compatible, and there has been little attempt so far by the Consultative Parties to formally prioritise these interests or determine how to deal with incongruities between them. The tension between science and commerce has become particularly marked with the advent of activities

⁸ According to Article 1(e) of PEPAT, “Antarctic Treaty system” means the Antarctic Treaty, the measures in effect under that Treaty, its associated separate international instruments in force and the measures in effect under those instruments”. PEPAT is, thus, one of a series of additional agreements that supplement the Antarctic Treaty.

such as bioprospecting in Antarctic and Southern Ocean waters,⁹ and the movement to large-scale tourism. In the case of tourism, there has been disquiet about the potential of tourism to interfere with the ‘global laboratory’, for instance through contamination by tourists of sites planned for future experimentation, the degradation of the terrestrial and marine environments by ship-borne tourism, or by diverting scientists from essential scientific work by involving them in revenue-generating activities, such as research station visits by tourists, or in tourism rescue operations (Verbitsky, 2013).

Undoubtedly the most intransigent problem, though, relates to the pre-Treaty claims upon Antarctica and the issue of sovereignty. While there are, in theory, no active claims upon Antarctica because of Article IV's immobilisation of the seven pre-Treaty claims, that has not prevented some of the claimant states from continuing to press their claims through various means. Dodds (2011) and Dodds and Hemmings (2009) have reported multiple examples of “frontier vigilantism” (which they describe as “how claimant states have sought to consolidate their sovereign rights while at the same time becoming ever more anxious about the behaviour of others”) and “sovereignty performances”, including incidences of the Latin American claimant states flying pregnant women to Antarctica to give birth on the continent, assertions of Antarctic sovereignty in recent national documents produced by Argentina, the 1996 decision by New Zealand to license toothfish fishing in the Ross Sea, the extension of US national defence plans to include Antarctica, and the naming by the British government of a portion of Antarctica within the UK claimant area as “Queen Elizabeth Land” in honour of the British sovereign's Diamond Jubilee (Dodds, 2006, 2011, 2012, 2013, 2014; Dodds and Hemmings, 2008). How the issue of sovereignty would be handled in a PES scheme for Antarctic tourism management would, then, be critical to its acceptance by the ATCPs, particularly the seven claimant and two semi-claimant states.

4. The Dutch paper on PES

Against the recent background of heightened awareness of the gap between ATS management and regulation of tourism and the expanding scope and scale of tourism in the southern continent, The Netherlands put forward an Information Paper to their fellow Consultative Parties and the Committee for Environmental Protection at the 2011 ATCM in Buenos Aires. The paper, “Paying for Ecosystem Services of Antarctica?”, was a brief introduction to the concept of ecosystem services and options for introducing PES in Antarctica (Netherlands, 2011). It noted the benefits people gain from ecosystems, describing ecosystem services as the “‘dividend’ that society receives from natural capital” and linking threats to ecosystems to the growing interest in PES (Netherlands, 2011). The paper also indicated the foundational notion of PES, that of internalizing externalities, with the intended outcome that

the non-marketed services provided by ecosystems will be taken into account in decision-making and allocation of benefits to those who own or manage the systems providing the service (especially regulating and cultural services). The party supplying the environmental services holds the property rights over an environmental good that provides a flow of benefits to the demanding party in return for compensation (Netherlands, 2011).

Following De Groot et al.'s classification of ecosystem services (provisioning services; regulating services; habitat services; cultural and amenity services), the Dutch paper used the same categorisations, supplementing the general examples with examples from Antarctica to

illustrate the specific benefits provided from the southernmost continent (De Groot et al., 2010, quoted in Netherlands, 2011). For example, where the general examples for ecosystem services from food and water provisioning services were, respectively, “Food (e.g. fish, game fruit)” and “Water (e.g. for drinking, irrigation, cooling)”, for Antarctica the specific examples were “krill, fish” and “fresh water from ice” (Netherlands, 2011). Some Antarctic examples illustrated the central role played in the global ecosystem by the continent, while others indicated the future potential of Antarctica to benefit humankind. For instance, under “Provisioning services” the general example was “Medicinal resources (e.g. biochemical products, models and test-organisms)” and the Antarctic example “undisclosed potential”, while for “Habitat services” with a general example “of genetic diversity (especially in gene pool protection”, the Antarctic example was “relatively large undisturbed ecosystem; high potential” (Netherlands, 2011). Similarly, a general example for “Regulating Services” was “Climate regulation (incl. C-sequestration, influence of vegetation on rainfall etc)”; Antarctica's was “cold point in earth system; melting will affect albedo and bring fresh water into coastal zone” (Netherlands, 2011).

Examples of PES in different countries were outlined in the paper, including the United States' Conservation Reserve programme and the Chinese Grains for Green programme. A more recent Chinese innovation, the Law on Management of Sea Area Use, was also examined. This law focuses on sea-use rights with the sea owner being the government and property rights being “re-allocated to those who are interested in using marine and coastal resources.” Marine functional zones operating under ecosystem-based management, are generated under the law with user rights “allocated to all stakeholders in coastal areas” (Netherlands, 2011). A user fee must be paid by “anyone interested in developing the coastal area by using marine resources, including fisheries” (Netherlands, 2011), with the fee varying depending on the proposed use activities, the maritime zone involved, and the sea and land uses concerned.

Transaction costs for PES were also canvassed, with a distinction being made between *ex ante* or initial costs of setting up a programme, and *ex post* or implementation costs. It was noted that governments can be involved in PES not only as rules-setters, but also as owners or managers of public lands and as “an intermediary organization to buy ecosystem services for their citizens” (Netherlands, 2011). Two categories of users were identified: private (for instance, “fishermen, tourism entrepreneurs, prospectors”) and semi-private/semi-government users (“scientific research organizations”) (Netherlands, 2011). While users of ecosystem services could be identified, however, the comment was made that in “the Antarctic context...it is not self-evident who will be the seller of the ecosystem services” (Netherlands, 2011).

That question, “who will be the sellers of Antarctic ecosystem services?”, was one of the four questions (and the first listed) which the Dutch paper stated would be “of great relevance” for considering options for PES schemes in Antarctica. The other three questions with which the paper ended were:

- 2) What is the well-defined service?
- 3) Who would be the eligible buyers?
- 4) What are the transaction costs of the implementation of payment schemes? (Netherlands, 2011).

5. The four questions for PES in Antarctic tourism management

The four questions at the end of the Dutch paper highlight key issues for the introduction of PES in Antarctic tourism management, and the unique difficulties that surround conceptualisation and operationalisation of PES for the continent. Sovereignty is critical to these questions. In other places where PES has been introduced, for instance, the sellers of ecosystem services have been identifiable as the relevant property owners, either public or private. But the unsettled question of

⁹ Bioprospecting has been occurring without regulation in the Southern Ocean and Antarctic waters for more than two decades because of a gap in international law relating to this activity in Areas Beyond National Jurisdiction.

sovereignty in Antarctica means that property rights are not determinable as they are in other parts of the world. The Faustian bargain of Article IV of the Antarctic Treaty which swapped state inclusion in the convention for a *cordon impermeable* around their claims may have enabled the establishment of the Treaty and the foundation of governance in the continent, but the unresolved nature of sovereignty in Antarctica represented by those abeyant claims and the continuing frontier vigilantism and sovereignty performances means that because the claims have been neither resolved nor extinguished, there is always the potential for them to become live again or, more likely, any policy initiative which is perceived (however incorrectly) to jeopardise or endanger those claims will be quashed by the claimant states. Sovereignty and the issues relating to it are, thus, central to any serious discussion of PES in Antarctica. Any policy initiative that is perceived by them to compromise their abeyant claims to sovereignty would be highly unlikely to receive support from those Consultative Parties and, because of the consensus decision-making model utilised at meetings, would not survive a formal ATCM consideration of the matter.

While it would seem logical that PES would have the effect of provoking opposition from non-claimant states and be supported by claimant states on the basis that PES has already been applied by and within sovereign states and would, thus, bolster sovereignty claims in Antarctica, counter-intuitively the opposite is likely to be true as far as claimant states (and at least some non-claimant states) are concerned. This is because where PES has already been implemented, it has been implemented in places where issues of sovereignty have already been settled. The authority of a sovereign state to establish PES is unquestioned precisely because the state is sovereign and does not have to establish, *de novo*, its legitimacy to undertake an executive action. In Antarctica that is not the case, so the proposal to introduce PES is more likely to induce trepidation among claimant states that condominium ATS governance introduction of PES and delegation of authority to an ATS institution to administer PES would reaffirm regime control in Antarctica and trump individual putative claimant sovereignty in the continent. For some non-claimant states, this perception might be sufficient reason itself to support the introduction of PES.

Because of the fundamental importance of attaining agreement from the claimant states, any discussion about PES would, therefore, have to start with an assurance that the introduction of PES in Antarctica could be achieved without jeopardising their abeyant claims. Consequently, the following section deals in detail with the construct of sovereignty and a possible model of sovereignty for use in the institutional context of Antarctic PES. In brief, though, and building on the basis of the model of pluralist sovereignty discussed later, perhaps the easiest means of overcoming the problem of property rights for the introduction of PES in Antarctica is to formally recognise the Antarctic Treaty Consultative Parties, for the purposes of PES, as possessing and exercising authority as trustees of the continent on behalf of the global community. This would be entirely consistent with the rhetoric of the Consultative Parties since the nineteen sixties about their role in Antarctica which has focused on the notion of stewardship, and similarly consistent with the position taken in the World Commission on Environment and Development report, *Our Common Future*, the Brundtland Report (1987) (World Commission on Environment and Development, 1987).¹⁰ It would also not be prejudicial to any possible future revival of sovereignty claims since the Consultative Parties would be operating under a positive duty of beneficial conservation of Antarctica (Verbitsky, 2013). This would give a clear, unambiguous answer to the question “who will be the

sellers of Antarctic ecosystem services?” as the seller of Antarctic ecosystem services would be the Consultative Parties in their role as the leadership (decision-making/governance) group of the ATS. Their entitlement to that seller position comes as trustees of Antarctica, and from their continued efforts since 1959 to carry out their duties and responsibilities under the Antarctic Treaty and, since 1991, the Protocol on Environmental Protection to the Antarctic Treaty.

The second question posed in the Dutch paper is “What is the well-defined service?”. The need for clearly defined services in PES is echoed by Martin-Ortega et al. (2012) who note that a “distinction needs to be made between the ‘targeted service’ i.e., the service that the buyers pay for, and the ‘action’ that the sellers need to undertake to ensure that the provisioning of the targeted service (and for which they are paid for)”.

In the case of Antarctic PES, the service for which commercial tourism operators would be paying could perhaps be most easily provided by the Consultative Parties as an ‘all-inclusive’ ecosystem service. This would avoid the problem of current information gaps, especially a relative lack of baseline studies about the Antarctic environment, in specifying individual ecosystem services and quantifying ‘inputs’ by sellers to the Antarctic estate, and avoid also the difficulty of attempting to disaggregate ecosystem services which can inter-link and impact each other (Nsoh and Reid, 2013). This is an approach that has been used elsewhere, for example in Costa Rica’s forestry-based *Pagos Por Servicios Ambientales* (PSA). The PSA first recognizes specific environmental services that are provided by the forest ecosystems, then engages in a two-step process which, firstly, abstracts those services so that “land use activities are taken as proxies for services”, and then bundles the services “so that payment to a landholder for one service assumes the provision of the others as well” (Thorpe and Graham, 2009). Based on the PSA experience, Antarctica’s “well-defined service” could, for instance, be the southern polar elements exemplified in the Dutch paper in each of the four categories used by the Millennium Ecosystem Assessment (supporting services; provisioning services; regulating services; and cultural services) which, a la the PSA, are then abstracted and bundled together for the transaction between buyer and seller.

It should be noted that while the PSA provides a useful approach it is not, however, the only possible way of achieving an ‘all-inclusive’ ecosystem service in Antarctic tourism management; as Salzman points out, “there are a lot of different ways you can slice and dice ecosystem services” (Salzman, 2011). Similarly, it would be possible to consider other elements that could be taken into account in constructing a PES scheme for Antarctic tourism management. Because science is one of the foundational premises of the Antarctic Treaty, the Consultative Parties could choose to reduce the PES for those operators who made substantive contributions to scientific work in Antarctica – for example, transporting scientific teams or equipment to Antarctica might offset some of the payment that would otherwise have to be made.

There is, of course, another question that lies behind the issue of the well-defined service and that is why should commercial tourism operators pay for ecosystem services when they have been able hitherto to utilise Antarctica for their operations without payment? The answer to that is twofold: the undisputed importance of Antarctica in the global biome, and the trusteeship role of the ATCPs. Commercial tourism operators utilise the unique natural environment of Antarctica and the multiple ecosystem benefits contained within it to achieve commercial profit. They commodify the Antarctic environment as the most pristine in the world, offering travel consumers an experience of polar wilderness and natural reserve that cannot be found anywhere else on earth. Their commercial operations are premised on those qualities of non-replicability and exclusive destination; hence, their customers pay premium prices for a tourism experience that they cannot gain in any other place. The efforts of the ATS regime in protection of the natural environment and associated ecosystems are integral to maintaining Antarctica’s status as a “natural reserve” with “wilderness and aesthetic values” from which commercial tourism

¹⁰ See, more generally, Chapter 10 of this report on “Managing The Commons.” The idea of the ATCPs as trustees is also reinforced in a study commissioned by Germany on the regulation of Antarctic tourism. The position taken by the authors of the study was that “the Parties manage Antarctica not for their own benefit or as an end in itself, but act as kind of trustees of the international community in the Antarctic Treaty area” (Germany, 2016).

operators derive profit.¹¹ However, and ironically, tourism contributes to the human footprint in Antarctica and its cumulative impact will, over time, have the effect of degrading the natural environment and ecosystems, especially as the number of tourists and tourist vessels operating in Antarctica increases. The introduction of PES in Antarctic tourism management, therefore, is intended to acknowledge the unique global status of Antarctica and what it provides in ecosystem services, and to add to the ATS contribution made to the preservation of the Antarctic environment upon which the Antarctic commercial tourism industry is based. Tourism operators would, thus, be paying for a use right in Antarctica. That use right reinforces that tourism is a “legitimate, but not privileged activity” in Antarctica (Germany, 2016). The PES paid by tourism operators could, in turn, be used to help ATS efforts, led by the ATPCs as the leadership group in the regime, to minimize and mitigate the human footprint in the continent.

“Who would be the eligible buyers?” is the third question from the Dutch paper. In the context of Antarctic tourism management, the answer is commercial tourism operators. The industry association representing commercial tourism operators (IAATO) would most likely be an eligible buyer, although it may not be the only one since it does not represent all types of Antarctic tourism.¹² Certainly, having a peak association like IAATO engage as a buyer of ecosystem services would have the advantage of reducing the transactional costs involved for the parties by combining the tourism operators involved in the buyer-seller process. An issue would remain, though, of those commercial tourism operators who are not members of IAATO. That is a problem which the ATPCs would need to turn their minds to in constructing a PES scheme for Antarctic tourism management in order to capture all the commercial tourism operators and ensure that every one of them is brought within the PES scheme. To achieve this with non-IAATO commercial tourism operators, the ATPCs would need to work closely with the International Maritime Organization (IMO) and ATPC port states in order to identify the non-IAATO operators and find means of gaining their compliance with PES. In that context, the ATPC port states might provide essential leverage as they could, for instance, refuse to allow docking or port services to a vessel whose operator was not a PES buyer. Tourism operators whose vessels were unable to dock, refuel or bring on supplies for the journey to Antarctica because of a refusal by ATPC port states to cooperate unless the operators were PES-compliant would find it very difficult indeed to continue their commercial operations. ATPC governments could also encourage Antarctic commercial tour operators to become members of an industry association through domestic legislation or regulation. And, just as the ATPCs could choose to offset some of the PES for tourism operators making a substantive contribution to science in Antarctica, they could choose also to set a higher PES for non-IAATO tourism operators in recognition of IAATO's cooperative relationship with the ATS regime. Awarding a lower PES to IAATO would also be an acknowledgment that the organization has played an important role in helping develop and adopt environmental standards for Antarctic tourism.

The final question in the Dutch paper was “What are the transaction costs of the implementation of payment schemes?”, and a distinction was made between *ex ante* or initial costs of setting up a programme, and *ex post* or implementation costs. In the case of a PES in Antarctic tourism management, the greatest *ex ante* costs would come in terms of programme design, capacity building, and physical infrastructure.

¹¹ Although it should be noted that a recurrent criticism of the Consultative Parties is that their efforts in environmental protection are insufficient. See, for instance, Brady (2013), Hemmings (2014), Hughes et al. (2016), and Kennicutt et al. (2014).

¹² A paper on Antarctic tourism submitted by Germany to the 2016 ATCM noted that “the International Association of Antarctica Tour Operators (IAATO) cannot be described as the main representative of operators for all types of Antarctic tourism. It does not apply to over-flights, day-trips, one-time expeditions, and especially yachting tourism: Of the over 200 known yachts that sailed in the Antarctic Treaty area between 1997 and 2013, only 16% were IAATO-members at the time of their Antarctic voyage” (Germany, 2016).

Programme design has been characterised as crucial to the “effectiveness and efficiency” (Martin-Ortega et al., 2012) of PES, with essential elements being the definition of ecosystem services, the basis for payments, clarification of what services are being paid for, and the amount and frequency of payment (Benjamin, 2013). One advantage of undertaking PES programme design would be the ability to simultaneously make a change in Antarctic Environmental Impact Assessments (EIA). The EIA have been criticised for a number of factors, including the failure to incorporate cumulative impacts, for the lack of rigorous consideration given them by ATPCs, and the suspicion that “forum shopping” by applicants occurs to find states willing to sponsor EIA (Hemmings and Roura, 2003; Bastmeijer and Roura, 2007). Nsoh and Reid (2013) note that in the context of valuation of ecosystem services, one approach “is that environmental impact assessment processes should not focus only on identifying any adverse environmental consequences but put a value on any ecosystem services lost.” A programme design for PES could be undertaken simultaneously with an overhaul of EIA, an exercise recommended by the German-commissioned study that undertook an analysis of the current legal framework of Antarctic tourism, and one which would reduce the *ex ante* costs (Germany, 2016).

The issue of physical infrastructure is dealt with in the next section on sovereignty. The remaining issue under this head is capacity building. Introducing any new policy tool involves a learning curve for all those engaged in its design and implementation, but in the case of Antarctic PES a benefit would be the information transfer that would be possible drawing on the experience and expertise of those involved in CCAMLR and familiar with the ecosystem approach. Given the growing number of PES schemes that have been established in the last decade, it would also be useful to learn from the best practice of authorities that have first-hand experience of PES operations. The ATS has worked successfully with other UN agencies, for instance with the International Maritime Organization in the creation of the mandatory Polar Code and this could provide a collaborative model for the Consultative Parties to draw upon.

6. Sovereignty and PES in Antarctic tourism

A word never mentioned in the Dutch paper, but central to any potential consideration of PES in Antarctic tourism – and certainly to considering the question, “who will be the sellers of Antarctic ecosystem services?” – is sovereignty. Sovereignty is the tripwire in any discussion of Antarctica's future, a hugely sensitive issue left unresolved by the Antarctic Treaty and a concept which has the potential power to blow apart the delicately constructed network of the ATS regime if handled without due caution and care. Because of its association with nationalism and suzerainty, sovereignty in its coupling with the pre-Treaty claims to Antarctic tends to evoke images of states serially segmenting the continent into southern polar extensions of their territories and governments. Indeed, if sovereignty in Antarctica is understood as static, indivisible and a characteristic only of territorially defined states, then it is unsurprising that visions of Antarctica which invoke sovereignty can look so bleak. However, sovereignty can be envisaged as having different forms that have evolved over time and in reaction to the exigencies of changing political orders. If understood in this way, sovereignty can be perceived to have developed diverse forms that reflect the needs of the globalised, multi-actor international system of the 21st century, and that forms of sovereignty outside the traditional Westphalian paradigm may be applicable in Antarctica and compatible with PES.

Besson has pointed out that sovereignty is an essentially contested concept because of its mutability (Besson, 2004). Nevertheless, sovereignty in its most basic form is conceptualised as concerned with authority, power, and rulership or dominion. Traditionally, as Prokhovnic (2007) notes, a distinction has been made between political and legal sovereignty with political sovereignty being “the highest

authority to rule or govern (and so to make rules and policy sanctioned in legislation)”, and legal sovereignty perceived as “the supreme jurisdictional authority (in a hierarchy of law-making bodies and practices)”. In the Westphalian state system, the two were conjoined within delineated territories in a unitary sovereign, something reflected in the Montevideo Convention on the Rights and Duties of States 1933 which includes as elements of statehood “a defined territory”, “government”, and “capacity to enter into relations with the other states” (Montevideo Convention on the Rights and Duties of States, 1933). The convention also acknowledges that, even prior to formal recognition by others, the state has the right “to legislate upon its interests, administer its services, and to define the jurisdiction and competence of its courts” (Montevideo Convention on the Rights and Duties of States, 1933). In international relations the division between external and internal sovereignty refers to the state's ability domestically to devise laws for the territory, enforceable by the police and courts, while the external dimension of sovereignty pertains to the state's interactions with other states, and its authority to determine whether it will enter into treaties and whether or not it will go to war.

In the era of globalization this form of sovereignty based on a territorial state/indivisible sovereign power nexus has been increasingly challenged by the rise of non-state actors, the formation of regional and global inter-governmental regimes, the development of universal jurisdiction, governance networks, and an inter-connected global economy – what Jayasuriya (1999) describes as “an emergent complex global order”. Within this framework, different, more nuanced forms of sovereignty continue to unfold, from the pooled (or shared) sovereignty of the European Union (Pleseá Cretan, 2015) to the disaggregated sovereignty in which “new sovereignty is status, membership, ‘connection to the rest of the world and the political ability to be an actor within it” (Chayes and Chayes, 1995 in Slaughter, 2004), through to a “pluralist sovereignty” which

means that entities that do not have their own territory, but only discharge certain functions, can be sovereign, and as a result – by way of recognition granted by states – there can be more than one sovereign in a given state-run territory (Avbelj, 2014).

Notwithstanding this, the Antarctic Treaty is a creation of an era in which sovereignty was viewed overwhelmingly through a monist lens that conflated political and legal sovereignty and sited that sovereignty within territorial states; this may have helped entrench a particular notion of sovereignty in Antarctica into the outlooks of claimant states. As well, the pressures of globalization, especially as they relate to the movement of forced migrants, have over the last decade generated intense displays of nationalism in a number of the claimant states that may also have helped buttress the Westphalian conception of sovereignty. The British decision to leave the European Union in 2016 as the result of a national referendum (the ‘Brexit’ vote) is but the latest example of a wave of nationalist expressions that have focused on perceptions of unitary sovereign territories being under threat from incursions by outsiders or ‘aliens’.

Seen against the backdrop of Westphalian sovereignty, PES may well be viewed by some of the claimant states as being inimical to any ambitions they might harbour towards one day achieving a recognised claim upon Antarctica. Because there still exist the pre-Treaty claims upon Antarctica, even if in abeyance, the question of the legal and political status of Antarctica and, in turn, clarification of ultimate decision-making authority in the continent is, in a Westphalian conception of sovereignty, unsettled. So long as the Treaty is in existence and all members of the claimant group are active participants in the ATS regime, there is no suggestion of the claims becoming live again. But, should the Treaty become defunct or a claimant state withdraw from the regime (to pick just two possibilities) then the claims issue would be revived. If a claimant state took only a Westphalian view of sovereignty in Antarctica, then the possibility of PES in tourism management might be perceived by them to be a policy

tool that would compromise the validity of their claim by fostering a rival sovereignty in Antarctica, a sovereignty of the ATS that might eventually erode or overcome their own claim. For, if sovereignty is conceptualised purely as a singular sovereign within a defined territory, then the inception of PES, a policy tool with revenue-generating capacities redolent of the prerogatives of a Westphalian sovereign would, indeed, appear to jeopardise that model. However, just as the international system in the 21st century now accommodates a multiplication of non-state actors, so too can sovereignty in the era of globalization accommodate a form of limited, functional sovereignty residing in a non-territorial entity.

Avbelj has outlined a form of sovereignty, pluralist sovereignty, that could be operationalized in Antarctica for PES, would not imperil the integrity of Article IV of the Antarctic Treaty's treatment of the pre-Treaty claims, and would not threaten the validity of Consultative Parties' exercise of national sovereignty within the ATS. Avbelj (2014) frames his account of pluralist sovereignty in the context of the European Union (EU) and European integration, adumbrating the *sui generis* nature of the EU politico-legal system (mirrored in Antarctica's unique system of governance), and emphasizing the constructivist lens employed in pluralist sovereignty which recognizes sovereignty as man-made. Hence, sovereignty in this conception is viewed as a “social, rather than natural concept, embodying a fundamental idea of authority and its legitimate exercise” (Avbelj, 2014). Avbelj acknowledges, though (2014), that “a claim to sovereignty must be plausible” and therefore recognised and accepted by “the relevant audience” inside (“the people and institutions of the claiming entity”) and outside (“the people and the institutions of entities with a recognised sovereign status”) the state.

Critically, in pluralist sovereignty “it is the acceptance of the claim to sovereignty that determines a sovereign” and, thus, it is not only states, but other entities, that can be sovereign (Avbelj, 2014). The traditional, Westphalian view of sovereignty which parcels together sovereignty, territory and state into a unitary form is, thus, unbundled in pluralist sovereignty. This means that

entities that do not have their own territory, but only discharge certain functions, can be sovereign, and as a result - by way of recognition granted by states – there can be more than one sovereign in a given state-run territory (Avbelj, 2014).

Substitute the phrase ‘condominium-run’ for ‘state-run’ and it is potentially a model of sovereignty that could fit the ATS regime for the purposes of PES. In this model the states comprising the condominium would still retain their sovereignty but, by recognizing the sovereignty for functional purposes of a non-territorial entity, they acknowledge that some competences in well-defined fields are carried out not by the states, but by the non-territorial entity. The sovereignty of the states in their own jurisdictional domains remains supreme, but by recognizing the competence of the non-territorial entity in a particular policy area of an external regime, the states recognise another sovereign. The non-territorial entity's competence is clearly demarcated and limited and it remains sovereign in that specified area only. Its sovereignty is dependent on the recognition shown it by the sovereign territorial states of the condominium, so it can be a functional sovereign entity only so long as the territorial state sovereigns consent to recognise it which, in turn, means that there is a premium for the non-territorial entity associated with functioning efficaciously in the area where it has taken on sovereignty in order to retain the recognition of the territorial states.

In recognizing the sovereignty of a non-territorial entity and thereby conferring legitimacy, states are acknowledging that the entity performs functions that may be too costly and/or too complex to deal with independently and which would benefit from the expertise of an entity dedicated to a particular function able to coordinate actions for a variety of states within the specified area – a well-recognised functional rationale. For Antarctica, therefore, the potential exists with

pluralist sovereignty for the Consultative Parties (as decision-makers on behalf of the condominium) to recognise a non-territorial entity vested with competence to deal with tourism PES. This could be the existing Secretariat or a new entity set up to deal specifically with PES, although there would be obvious financial savings from locating PES operations within the Secretariat and such a move would fit with the long-standing ATCP dislike of creating physical ATS institutions.

Legally, no impediment exists to the ability of the Consultative Parties either to introduce PES or to empower a non-territorial entity with authority to implement and administer PES. Article IX(1) of the Antarctic Treaty provides for regular (now annual) Antarctic Treaty Consultative Meetings of the Consultative Parties

for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica, and formulating and considering, and recommending to their Governments, measures in furtherance of the principles and objectives of the Treaty, including measures regarding:

- (a) use of Antarctica for peaceful purposes only;
- (b) facilitation of scientific research in Antarctica;
- (c) facilitation of international scientific cooperation in Antarctica;
- (d) facilitation of the exercise of the rights of inspection provided for in Article VII of the Treaty;
- (e) questions relating to the exercise of jurisdiction in Antarctica;
- (f) preservation and conservation of living resources in Antarctica.

The authorisation in Article IX(1)(f) empowering state representatives through ATCMs to recommend measures, including “preservation and conservation of living resources in Antarctica”, puts environmental protection firmly within the ambit of Consultative Parties governance, and this is additionally reinforced in the Protocol on Environmental Protection to the Antarctic Treaty which places positive duties upon the Consultative Parties, as the leadership group in the ATS, to protect “the Antarctic environment and dependent and associated ecosystems”, a phrase used three times in the Preamble alone and which is linked in its third usage in the Preamble to “the interest of mankind as a whole”.

Albej's account of pluralist sovereignty and the possibilities it provides for PES in Antarctica resonates also with Keane's description of Antarctica as an “emergent polity” whose “break with the language and politics of sovereignty is of global significance” (Keane, 2014). Keane notes that despite the Antarctic Treaty's origins in disputed sovereignty, “the treaty enabled Antarctica to become the first continent to abandon, and to push beyond, the modern doctrine of sovereign territoriality” (Keane, 2014). Antarctica is regularly referred to as an international or global commons, although during the 1980s a campaign was waged unsuccessfully by developing states to classify the continent as a Common Heritage of Mankind in line with the status of The Area or outer space in, respectively, the United Nations Convention on the Law of the Sea 1982 and Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies 1967. The idea of Antarctica as a commons, though, is *de facto* rather than *de jure* as the seven pre-Treaty claims still overshadow final determination of Antarctica's status. Nevertheless, in order to prevent a potential obstacle to PES by claimant states about the commons terminology (since that is clearly related to the sovereignty issue) it would potentially be useful to follow Chaturvedi's “visualization of Antarctica as a global knowledge commons” (Chaturvedi, 2011), moving the idea of the Antarctic commons from a territorial to an intellectual base that would be especially salient for the knowledge economies of the twenty first century. Chaturvedi's conceptualisation of Antarctica is built upon ideas expounded by Herbert in the realm of bioprospecting where he

has equated the notion of “public good” with that of “global

knowledge commons”, with due emphasis on “open” access to “publicly funded and internationally open knowledge”. The underlying geoeconomic rationale here relates to a “global public good [including scientific knowledge] with pervasive collective consumption qualities consumed across states (nations)” (Chaturvedi, 2011).

Under the Antarctic Treaty such an interpretation of Antarctica's status is apposite. Peace and international scientific collaboration are the foundational elements valorized by the Treaty, the Preamble to the Antarctic Treaty making it clear that “freedom of scientific investigation in Antarctica...accords with the interests of science and the progress of all mankind”. Antarctica is well known for the rich scientific data that has been generated from investigations and experiments conducted there in many disciplinary areas and the gains made in collective knowledge and understanding. As global public goods include global policy outcomes, there is an abundance of ways in which the information produced from scientific research in the continent can be utilised in actions to fight cross-border problems such as environmental pollution and oceans acidification (Kaul et al., 2003).

The conceptualisation of pluralist sovereignty as a basis for tourism PES in Antarctica would have some distinct advantages for the Consultative Parties. As indicated above, the delegation of PES to a non-territorial entity, such as the Secretariat of the ATS, by the Consultative Parties would save individual signatory states having to separately deal in their own jurisdictions with introducing infrastructure and bureaucracy to operationalize, monitor and ensure compliance with tourism PES for Antarctica, something that would be especially burdensome for coastal states. It would prevent costly duplication of resources and personnel and provide greater efficiencies, both in *ex ante* and *ex post* transaction costs.

Adoption of PES in tourism management would also be consistent with the “General Principles of Antarctic Tourism” adopted by the Consultative Parties in 2009. In particular, it aligns well with the second and sixth of these – respectively,

Tourism should not be allowed to contribute to the long-term degradation of the Antarctic environment and its dependent and associated ecosystems, or the intrinsic natural wilderness and historical values of Antarctica. In the absence of adequate information about potential impacts, decisions on tourism should be based on a pragmatic and precautionary approach, that also incorporates an evaluation of risks

and “All tourism organizations should be encouraged to provide a focus on the enrichment and education of visitors about the Antarctic environment and its protection” (Resolution 7, 2009). As a policy tool, PES could be used by ATCPs to help develop an ATS tourism policy integrated by PES and focused around the values of Antarctica, how these relate to each other, and the interrelationships between these values and the stake-holders in Antarctica. An interrogation of the values (intrinsic and instrumental) of Antarctica on the part of the ATCPs is a long-overdue exercise that would clarify immeasurably the parameters of policy-making, not just in tourism management but in a variety of policy areas. It would also provide an opportunity to examine the “pragmatic” aspect of a tourism policy (per the second principle of Resolution 7), an as yet undefined and unexplored plank of future tourism policy, and what this means in relation to the values of Antarctica. PES could also be used by the ATCPs to help fulfil the second part of the sixth principle of Resolution 7 (pertaining to education of visitors about Antarctica's environment and its protection) by dedicating a portion of PES revenues to research about Antarctica and production of educational resources that could be used by tourism organizations.

A further advantage of PES for the leadership group is that it would provide a much-needed reliable revenue stream to supplement the monies paid yearly by the ATCPs from their national budgets, especially in times of economic downturn. The current reliance on

the ATCPs means that in times of recession, Antarctic budgets suffer cuts or restrictions (Verbitsky, 2015). Regular financial injections from tourism PES would allow the CEP and Scientific Committee on Antarctic Research (SCAR) groups, for instance, to move forward with capital intensive items in the CEP's five-year work plans (such as those involving the use of drones to monitor protected areas) and also help assure continued access to vital, but costly, navigational aids. The regular financial income could also help pay for capacity building, start-up costs, and ongoing costs of administering the PES system. While there is no absolute guarantee that monies generated from PES would necessarily be put to such uses by the ATCPs, it is difficult to envisage how they would rationalise diversion of monies gained from PES to non-environmental purposes. To do so would be to risk the loss of reputation and legitimacy as stewards of Antarctica, especially given the enhanced twenty-first century public consciousness of the importance of Antarctica's environment to the global biome, and to raise suspicion among non-signatory states that the ATCPs were engaged in a political rort to plunder Antarctica and enrich themselves. In a similar vein, both that public awareness and a clear and transparent linkage between PES and utilisation of monies gained from PES being directed into Antarctic environmental programmes would also be inhibitors of any push by states outside the ATS regime to convert PES into a benefit-sharing scheme on the grounds that Antarctica is a global commons. These two factors are, instead, likely to reinforce each other. The conversion of monies gained from the use of Antarctic ecosystems into programmes aimed at protection of the Antarctic environment would be an extremely strong defence to a benefit-sharing proposal, since the benefits of mitigating the human impact in Antarctica and protecting the Antarctic environment would accrue to everyone on earth and include both current and future generations.

As well, by designating the Secretariat or a dedicated organization as the non-territorial entity responsible for PES, the ATCPs would be conferring sovereignty in one explicit area only within tourism policy. Their own national sovereignties would not be diminished by this; indeed, each ATCP would have to exercise its sovereign authority to consent to the introduction of a tourism PES policy for the ATS, and to permit the management of the policy being vested in a non-territorial entity. Consenting to these would not affect the sovereignty of the ATCPs as it relates to claims referenced in the treaty, as Article IV(2) makes clear that

No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force.

Nor would it affect ATCP exercise of sovereignty in the ATS. After all, the consensus requirement in voting at the ATS prevents any kind of unilateral supranational measures being imposed on states against their wishes. In this respect, pluralist sovereignty is very different from, for instance, pooled sovereignty in the European Union which permits a qualified majority vote to bind member states in their own jurisdictions. Rather, the ATCPs would be conferring sovereignty on a non-territorial entity within one sphere of a specified policy area under the ATS regime. The Consultative Parties would retain control and authority over tourism policy as a whole, and would still be able to direct, alter or amend aspects of PES tourism policy as they collectively saw fit.

In this context, it should be noted that measures passed at ATCMs do not become effective until they have been ratified or incorporated into the municipal law of signatory states. Consequently, the meetings at which the Consultative Parties agree to measures are “only somewhat authoritative” (Joyner, 1998). The ATCMs do not have the ability to enforce measures without the consent of state signatories, nor do they possess formal powers to penalise non-compliant signatories.

Coupled with the consensus threshold needed for initiating measures, this makes the ATCM as an institution of the ATS doubly dependent on member states' willingness to approve measures and then themselves institute national procedures or domestic legislation supporting ATCM recommendations to governments.

By introducing PES in Antarctic tourism and enabling the Secretariat (or another non-territorial entity) to implement PES, the ATCPs would be significantly enhancing their reputation for governance in Antarctic tourism. The lack of an ATCP Antarctic tourism policy is a serious governance deficit in an era where the real-time challenges in the policy area are increasing, and the inability of the Consultative Parties to lead in tourism does not support the exceptionalism argument that the ATCPs have used to bolster their stewardship position. The demonstration of a commitment to long-term provisioning of the financial resources needed for protection of the Antarctic environment bolstered by from PES), acknowledgment of the integral place of the continent in maintaining the positive health of the global biome and the connectedness of the Antarctic environment to international efforts to prevent invidious climate change, and assertion of unambiguous leadership in the tourism policy arena through the introduction of PES would evidence ATCP determination to take seriously their duties to protect the southern polar environment as a nature reserve, safeguard its wilderness and aesthetic values, and preserve the continent on behalf of the international community and for the benefit of humankind as a whole.

Importantly, the monies raised from PES could be used to help progress two of the United Nations Sustainable Development Goals (SDG). SDG 14 and 15 are, respectively, “Life Below Water” and “Life on Land” and both will require considerable financial assistance to achieve their goals. Each has objectives directly relevant to protection and management of the Antarctic environment – in the case of SDG 14 the objective is to “conserve and sustainably use the oceans, seas and marine resources for sustainable development”, while for SDG 15 the objectives are “protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss” (United Nations, n.d). The two SDG objectives are not only linked, but the idea of ecosystem services is integral to both. As Fulton et al. (2015) note of SDG 14,

Oceans and coasts partially support about 75% of the global population, which resides in the wider coastal margins. This fraction is growing, with the majority of the world's mega-cities located coastally. Thus there is a growing dependency on the significant ecosystem services provided by these systems – including the transportation of goods; food through fisheries and aquaculture; and new uses such as the generation of renewable energy, mining of materials and tourism. Many of these (and other services) rely on healthy levels of biological diversity.

Similarly, Baptiste and Martin-Lopez (2015) point out the ecosystem linkages with SDG 15 and also draw attention to the importance of preserving the environment and ecosystems not just for current but also future generations. This is very much in line with the thrust of the Brundtland Report and with the ATCP's claim to stewardship of Antarctica, a claim premised on the idea of protecting the southern polar continent for people now and in the centuries to come.

The sustainable management and conservation of terrestrial and inland freshwater ecosystems and their biodiversity is essential for fulfilling the environmental, socio-cultural and economic needs of present and future generations and, therefore, plays a vital role in the international agenda for achieving a better life for all human societies. Biodiversity and terrestrial ecosystems are essential for providing ecosystem services and benefits to society that support different dimensions of human wellbeing, such as basic material for a good life (e.g. food, freshwater, energy), physical and mental

health, security, cultural diversity, freedom of choice and action and good social relationships.

7. Critiques of PES and difficult issues for the ATCPs

PES is not a silver bullet for tourism management in Antarctica, nor is it an unproblematic policy tool. There is debate, for example, about the methods of attempting to provide an economic valuation for ecosystem services with critiques about differing methodologies, the inability to capture the full totality of economic value and achieving only an approximation, the context-specific nature of ecosystems impairing benefit-transfer approaches, and the possibility for economic valuation to become an end in itself (Bourguignon, 2015). In relation to the latter, a concern has also been raised that “marketing ecosystem services can modify the way humans perceive and relate to nature and that this can be counterproductive for conservation purposes (Martin-Ortega et al., 2012).

Salzman suggests that two levels of problems present to policy-makers contemplating PES. The first is what he terms “fundamental issues” comprising “which service to provide, the buyers and sellers, the level of service needed, the payment mechanism, when payments take place and what form the payments take” (Salzman, 2009). The second level of issues are “challenges to PES effectiveness” that “range from property rights and supporting institutions to perverse incentives” (Salzman, 2009). They include: modelling and monitoring in order to be able to measure and assess service provision; clarity about property rights and contract enforcement to assign rights and responsibilities; and ensuring supporting institutions and authorities are able to manage disputes (Salzman, 2009).

These are not issues that are easily resolved, but they are *resolvable* so long as there is the political will to do so. It is that factor which is perhaps the most fundamental for an Antarctic PES and finds resonance in the literature in what Alarcon et al. (2016) describe as “susceptibility to political pressures”. The problem of sovereignty has already been canvassed extensively in this article and while it is certainly possible to find ways of dealing with sovereignty that are consistent with the introduction of PES in Antarctica, whether there is the political will to do so remains unknown. The question of political will extends also to the ATCPs in their trusteeship role assuming a legal identity as sellers of ecosystem services and acting as a unit, something which would require the Consultative Parties to demonstrate the ability to act more cohesively in the tourism policy domain than they have done in the past.

Susceptibility to political pressure also includes the likely strong resistance from commercial tourism operators to a PES scheme. While there are solid arguments that can be made for why the ATCPs should introduce a PES in Antarctic tourism management, the professional association of tourism operators (IAATO) has the advantage of being a cohesive and effective actor and lobbyist in ATS affairs and would no doubt bring its expertise in those roles to counter adoption by the Consultative Parties (Weber, 2012).

Beyond resistance to the adoption of PES is the potential for “political interest” to “play a major role in the design and implementation of PES programs, pushing ecosystem service provision and/or improvement into second place”, a phenomenon that has been observed in PES design exercises in a variety of states and to which the ATS regime would be equally susceptible (Alarcon et al., 2016). This would be a difficult issue for the ATCPs to deal with, but no more difficult than in any other Antarctic policy domain and certainly is not one that is beyond the ability of the Consultative Parties to overcome. It would, though, require the Consultative Parties to assert their leadership position and emphasize that determining policy is a perquisite of the governance group with whom final decisions rest, even if the process of stakeholder consultation is a collaborative one.

Alongside this is the need to educate stakeholders about PES. This,

too, has been noted as an action that has had to be undertaken in other places where PES has been adopted. Nsoh and Reid (2013) indicate that

the value of the natural environment to society and the more holistic approach that they encourage require a shift in both the mindset and practices of many of those who manage and use land.

and this suggests that adoption of PES would need to be followed by an education campaign to raise awareness of PES and to build understanding and support for its use in tourism management.

A final, but vital, issue is whether The Netherlands, as the initiator of the PES proposal will be able to persuade sufficient numbers of fellow ATCPs that PES should not be relegated indefinitely to the tourism policy back-burner or dismissed as too difficult to pursue. The Report of the Intersessional Contact Group ‘Outstanding Questions’ on Antarctic Tourism (Secretariat of the Antarctic Treaty, 2011) presented to the XXXV ATCM in 2012 stated that views were received from eleven state parties (Argentina, Australia, Ecuador, Germany, France, Japan, Norway, New Zealand, Poland, the United Kingdom, and the United States of America) as well as from IAATO and the Antarctic and Southern Ocean Coalition (ASOC) to the ‘Outstanding Questions’. Question (r)ii of the ‘Outstanding Questions’ asked

Should the ATCM establish a system of obligatory or voluntary payments by individual tourists or tourist organizations (as a payment for ‘ecosystem services’)? What would be the purpose of levying such charges? (e.g., financing long-term monitoring, financing educational programs)?

The Report noted that only one among the list of outstanding questions had been challenged and that was “the question whether the ATCM should establish a system of obligatory or voluntary payments by individual tourists or tourist organizations (as a payment for ‘ecosystem services’).” Unfortunately, no indication was given as to how many or which participants had challenged the question or on what grounds, so it is not possible to ascertain from the documentation either the identity of the challengers (whether they were claimant or non-claimant states, or included IAATO or ASOC), the numerical significance of the challenge (whether a small or large number of ATCPs were involved in challenging the question), or the reasoning advanced by the challengers.

Because the consensus-based system of ATS governance places a premium on persuasion and the growing of agreement to policy initiatives, the challenge to the PES question reported by the Intersessional Contact Group is not fatal as it might be in other regimes. The paucity of ATCM tourism policies is a testament to the very considerable period of time that it takes for initiatives to gather support among ATCPs and reach the required ATCM consensus. Success is often dependent on an ATCP champion willing to undertake the lengthy diplomatic task of building support for an initiative and bringing it to policy fruition. A hint of this appeared evident in the Final Report of the 2011 ATCM (2011) in which the introduction of the Dutch proposal was recorded and where it was noted that

The Netherlands indicated its hope that this paper, the first ever on this subject in the ATCM, would give rise to a debate and an exchange of views that could mature over the following years. The Meeting noted the usefulness of the paper for future consideration of this subject area.

8. Conclusion

The possibility of PES as a policy tool emerged formally onto the ATCPs radar through the Dutch 2011 ATCM paper and while it could not be described as having received unqualified support at the following year’s meeting, neither has it disappeared from the suite of options of potential tourism instruments for the Consultative Parties to

choose from. At the 2016 ATCM in Santiago, New Zealand and India jointly presented a document to the meeting that recommended the ATCM endorse two milestone objectives: working toward a common vision of tourism, and the construction of a tourism multi-year work plan (New Zealand and India, 2016). As part of moving toward these objectives, it was suggested that Consultative Parties consider the Intersessional Contact Group's own report which discusses priority questions in Antarctic tourism and includes reference to a suggested tourism tax (New Zealand and India, 2016).

These are encouraging signs that appear to indicate the determination, after a prolonged period of stasis, of the Consultative Parties to find a strategic vision and framework for Antarctic tourism management that resonates with the description of Antarctica as a “natural reserve” with “wilderness and aesthetic values”, is philosophically consistent with the foundational Treaty premises of science and peace, and enables pro-active management by the ATCPs of this increasingly complex domain. As PES gains traction in different parts of the globe as a policy instrument and becomes a tool more familiar to the Consultative Parties, it may well recommend itself to the leadership group as an instrument that offers advantages in harmonizing with the ecosystem approach adopted in CCAMLR, providing an additional income stream to directly assist with the Consultative Parties' own efforts in protection of the Antarctic environment and ecosystems, and clarifying the primacy of their position as the governance group in tourism management. Adopting PES in Antarctic tourism management may appear to the Consultative Parties a step comparable to crossing the Rubicon, but it is one worth taking for helping them achieve effective and sustainable tourism management in the white continent.

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